REMARKS/ARGUMENTS

The Office Action mailed March 8, 2007, has been received and reviewed. Claims 1, 3 through 19, 21 through 41, and 43 through 53 are currently pending in the application. Claims 1, 3 through 19, 21 through 41, and 43 through 53 stand rejected. Applicants have amended claims 1 and 19 and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 102(b) Anticipation

Anticipation Rejection Based on U.S. Patent No. 429,658 to Stanford, or, in the alternative, Obviousness Rejection based on the Combination of Stanford and U.S. Patent No. 2,520,430 to Pearson

Claims 1, 3, 4, 14, through 19, 36 through 41, 43, and 49 through 53 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Stanford (U.S. Patent No. 429,658). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 1, 3, 4 and 14 through 18

Independent claim 1 of the presently claimed invention is directed to a fluid flow control device. As amended herein, the fluid flow control device of claim 1 comprises: a valve having a fluid inlet, a fluid outlet and a flow path defined therebetween, the valve further including a valve seat in communication with the flow path and a valve stem disposed within the valve seat and cooperatively configured with the valve seat to cause the valve stem to advance or back off within the valve seat responsive to rotation of the valve stem about a first axis; a gear member coupled to the valve stem; and a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis, and *wherein the at least a portion of the linear positioning member which is*

configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.

The examiner cites Stanford as disclosing:

> [A] fluid flow control system comprising: a controller (i.e., operator that operates the linear positioning member (k)); at least one fluid flow control device (Fig. 1) operably coupled with the controller, the at least one fluid flow control device comprising: a valve having a fluid inlet (a'), a fluid outlet (d) and a flow path defined therebetween, the valve further including a valve seat (near (b)) in communication with the flow path and a valve stem (c') disposed within a valve seat and cooperatively configured with the valve seat to cause the valve stem to advance or back off within the valve seat responsive to rotation of the valve stem about a first axis; a gear member (g) coupled to the valve stem; and a linear positioning member (k) having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member along the second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement. (Office Action, page 3).

It is clear that Stanford fails to describe a worm gear. This is evident not only from an examination of Stanford, but also from the fact that the Examiner relies on an alternative obviousness rejection (addressed hereinbelow), stating: "should it be determined that the rack (i) in Stanford *does not comprise a worm*..." (Office Action, page 4, emphasis added). Moreover, Applicants have made the recitation of the worm gear even more explicit stating that it is a "substantially helically cut" worm gear. Thus, Applicants submit that Stanford fails to describe a linear positioning member configured to be displaced along a second axis (as defined in claim 1), and having at least a portion thereof as a substantially helically cut worm gear.

Applicants, therefore, submit that claim 1 is clearly allowable over Stanford. Applicants further submit that claims 3, 4 and 14 through 18 are also allowable over Stanford based on their dependency from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 14, Applicants submit that Stanford does not describe a worm gear as recited in claim 1, wherein the worm gear is *substantially rotationally fixed about the second axis.*

With respect to claim 15, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to accommodate a fluid flow at a pressure of up to at least approximately 3,000 pounds per square inch.

With respect to claim 16, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to have a flow coefficient (C_V) of approximately 0.004.

With respect to claim 17, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to maintain a substantially constant flow rate of fluid flowing therethrough at approximately 1 milliliter per minute or less.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1, 3, 4 and 14 through 18.

Claims 19 and 36 through 40

Independent claim 19 is directed to a fluid flow control system. The system of claim 19, as amended herein, comprises: a controller and at least one fluid flow control device operably coupled with the controller. The at least one fluid flow control device comprises: a valve having a fluid inlet, a fluid outlet and a flow path defined therebetween, the valve further including a valve seat in communication with the flow path and a valve stem disposed within the valve seat and cooperatively configured with the valve seat to cause the valve stem to advance or back off within the valve seat responsive to rotation of the valve stem about a first axis; a gear member coupled to the valve stem; and a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis, and *wherein the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.*

The Examiner's reliance on Stanford and the teachings of Stanford are set forth hereinabove with respect to claim 1. Applicants submit that Stanford clearly fails to describe all of the limitations of claim 19. For example, as previously discussed, Stanford fails to describe *the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a helically cut worm gear.*

Applicants, therefore, submit that claim 41 is clearly allowable over Stanford. Applicants further submit that claims 36 through 40 are also allowable over Stanford as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 36, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to accommodate a fluid flow at a pressure of up to at least approximately 3,000 pounds per square inch.

With respect to claim 37, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to have a flow coefficient (C_V) of approximately 0.004.

With respect to claim 38, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to maintain a substantially constant flow rate of fluid flowing therethrough at approximately 1 milliliter per minute or less.

With respect to claim 39, Applicants submit that Stanford does not describe the worm gear as recited in claim 19, wherein the worm gear is *substantially rotationally fixed about the second axis.*

Applicants, therefore, respectfully request reconsideration and allowance of claims 19 and 36 through 40.

Claims 41, 43 and 49 through 53

Independent claim 41 of the presently is directed to a method of controlling the flow of a fluid. The method of claim 41 comprises: providing a valve having an inlet, and outlet, a flow path defined between the inlet and the outlet, and a valve seat in communication with the flow path; disposing a valve stem within the valve; coupling the valve stem with a gear member; engaging the gear member with a complementary surface of a linear positioning member; *forming the complementary surface of the linear positioning member as a substantially helically*

cut worm gear; flowing the fluid through the flow path; and displacing the linear positioning member along a first axis to rotate the gear member and valve stem about a second axis and displacing the valve stem along the second axis.

The Examiner's reliance on Stanford and the teachings of Stanford are set forth hereinabove with respect to claim 1. Applicants submit that Stanford clearly fails to describe all of the limitations of claim 41. For example, as previously discussed, Stanford clearly fails to describe *forming the complementary surface of the linear positioning member as a substantially helically cut worm gear.*

Applicants, therefore, submit that claim 41 is clearly allowable over Stanford. Applicants further submit that claims 43 and 49 through 53 are also allowable over Stanford as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 43, Applicants submit that Stanford fails to describe substantially restraining the worm gear from rotating about the first axis.

With respect to claim 49, Applicants submit that Stanford fails to describe, either explicitly or inherently, flowing a compressible fluid through the flow path.

With respect to claim 50, Applicants submit that Stanford fails to describe that flowing the fluid through the flow path includes effecting a phase change within the fluid.

With respect to claim 51, Applicants submit that Stanford fails to describe, either explicitly or inherently, flowing the fluid at a substantially constant rate of approximately 1 milliliter per minute or less.

With respect to claim 52, Applicants submit that Stanford fails to describe, either explicitly or inherently, maintaining a pressure of the fluid within approximately 3 pounds per square inch of a predetermined pressure.

Applicants, therefore, respectfully request reconsideration and allowance of claims 41, 43 and 49 through 53.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection based on the Combination of U.S. Patent No. 429,658 to Stanford and U.S. Patent No. 2,520,430 to Pearson

Claims 1, 3, 4, 14, through 19, 36 through 41, 43, and 49 through 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Stanford (U.S. Patent 429,658) and Pearson (U.S. Patent No. 2,520,430). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The obviousness rejection of the claims is improper because the references relied upon by the Examiner fail to teach or suggest all of the limitations of the presently claimed invention and because there is a lack of motivation to combine the references in the manner proposed by the Examiner.

Claims 1, 3, 4 and 14 through 18

The Examiner relies on Stanford as discussed hereinabove with respect to the anticipation rejection of claim 1. The Examiner relies on Pearson as disclosing "a rack K1 having a worm gear driving a complementary worm wheel (K)." (Office Action, page 4). The Examiner then states that it would have been obvious to "provide the rack in Stanford with a worm, as evident from Pearson, for the purpose of providing a compact means for providing a high gear ratio and generally preventing the driven gear from driving the worm." (*Id*). Applicants respectfully disagree.

Stanford describes a spraying device or nozzle used to atomize liquids. The nozzle includes a body portion (a) defining a passage having a discharge opening (b). A cooperating

tapered plug (c) moves relative to the discharge opening to define an annular discharge orifice. The tapered plug is coupled to an extension ring (d) that is threadably coupled with the body portion. Rotation of the extension ring relative to the body portion results in the displacement of the tapered plug. In one embodiment, the extension ring includes teeth (g') formed on an external surface thereof and which mesh with a rack-bar (i)/slide-bar (k). Displacement of the slide-bar results in rotation of the extension ring. (See, e.g., page 1, lines 31 through 95). However, Stanford clearly fails to teach or suggest the rack-bar/slide-bar, or any portion thereof, as being configured as a substantially helically cut worm gear.

Pearson describes a needle valve used in a gas liquefying apparatus. The needle valve includes a "worm wheel K which engages a worm K^1 on a shaft K^2 suitably disposed and driven for example by an electric motor." (Pearson, Col. 2, lines 39-42). It is clear from Pearson's description and drawing figures that the worm is rotated about its longitudinal axis by the electric motor to drive the "worm wheel K." Applicants find absolutely no teaching or suggestion in Pearson, nor does the Examiner point to any teaching or suggestion, regarding *linearly displacing* the worm along its longitudinal axis.

Moreover, Applicant's submit that there is a clear lack of motivation to modify Stanford as proposed by the Examiner by replacing the rack with a worm gear such as that described by Pearson. The Examiner states that one of ordinary skill in the art would be motivated to make the proposed modification because it would provide "a compact means for providing a high gear ratio [while] generally preventing the driven gear from driving the worm." (Office Action, page 4). However, while Applicants recognize the ability of a worm gear to "provide a high gear ratio" and prevent "the driven gear from driving the worm," those of ordinary skill in the art understand that such functions are achieved *based on the worm's rotational displacement about its longitudinal axis*. In other words, linearly displacing a worm gear simply does not provide the same reduction in gear ratio as rotational displacement of the same worm gear. Additionally, the Examiner simply has not explained how a *linearly displaceable* worm gear, as recited in claim 1 of the present invention, prevents the driven gear from driving the worm.

With the understanding that such functions, as proffered by the Examiner as motivations for combining Stanford with Pearson, are provided through rotational displacement of a worm rather that through *linear displacement* of a worm (and Applicants again note that the Examiner has not cited any references teaching or suggesting linear displacement of a worm gear), one of

ordinary skill in the art would clearly lack motivation to combine Stanford and Pearson in the manner proposed by the Examiner.

As such, Applicants submit that claim 1 is clearly allowable over Stanford and Pearson. Applicants further submit that claims 3, 4 and 14 through 18 are also allowable over Stanford and Pearson based on their dependency from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 14, Applicants submit that Stanford and Pearson fail to teach or suggest a worm gear as recited in claim 1, wherein the worm gear is *substantially rotationally fixed about the second axis.* Indeed, Pearson teaches away from such a limitation in describing a traditional worm gear that is rotationally driven by an electric motor.

With respect to claim 15, Applicants submit that Stanford and Pearson fail to teach or suggest a valve that is configured to accommodate a fluid flow at a pressure of up to at least approximately 3,000 pounds per square inch.

With respect to claim 16, Applicants submit that Stanford and Pearson fail to teach or suggest a valve that is configured to have a flow coefficient (C_V) of approximately 0.004.

With respect to claim 17, Applicants submit that Stanford and Pearson fail to teach or suggest a valve that is configured to maintain a substantially constant flow rate of fluid flowing therethrough at approximately 1 milliliter per minute or less.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1, 3, 4 and 14 through 18.

Claims 19 and 36 through 40

The Examiner relies on Stanford as discussed hereinabove with respect to the anticipation rejection of claim 19. The Examiner relies on Pearson as disclosing "a rack K1 having a worm gear driving a complementary worm wheel (K)." (Office Action, page 4). The Examiner then states that it would have been obvious to "provide the rack in Stanford with a worm, as evident from Pearson, for the purpose of providing a compact means for providing a high gear ratio and generally preventing the driven gear from driving the worm." (*Id*). Applicants respectfully disagree.

The teachings of Stanford and Pearson are discussed above with respect to the obviousness rejection of claim 1. As previously discussed, Stanford and Pearson clearly fail to

teach or suggest a *linear displacement member* that includes at least a portion configured as a helically cut worm gear.

Moreover, those of ordinary skill in the art would recognize that the Examiner's proffered motivation to combine Stanford and Pearson are lacking. Specifically, the ability of a worm gear to "provide a high gear ratio" and prevent "the driven gear from driving the worm," are *based on the worm's rotational displacement about its longitudinal axis.* In other words, linearly displacing a worm gear simply does not provide the same reduction in gear ratio as rotational displacement of the same worm gear. Additionally, the Examiner simply has not explained how a *linearly displaceable* worm gear, as recited in claim 19 of the present invention, prevents the driven gear from driving the worm.

Thus, one of ordinary skill in the art would clearly lack motivation to combine Stanford and Pearson in the manner proposed by the Examiner.

Applicants, therefore, submit that claim 19 is clearly allowable over Stanford and Pearson. Applicants further submit that claims 36 through 40 are also allowable over Stanford and Pearson as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 36, Applicants submit that Stanford and Pearson do not teach or suggest a valve that is configured to accommodate a fluid flow at a pressure of up to at least approximately 3,000 pounds per square inch.

With respect to claim 37, Applicants submit that Stanford and Pearson do not teach or suggest a valve that is configured to have a flow coefficient (C_V) of approximately 0.004.

With respect to claim 38, Applicants submit that Stanford does not explicitly or inherently describe a valve that is configured to maintain a substantially constant flow rate of fluid flowing therethrough at approximately 1 milliliter per minute or less.

With respect to claim 39, Applicants submit that Stanford and Pearson do not teach or suggest the worm gear as recited in claim 19, wherein the worm gear is *substantially rotationally fixed about the second axis.*

Applicants, therefore, respectfully request reconsideration and allowance of claims 19 and 36 through 40.

Claims 41, 43 and 49 through 53

The Examiner relies on Stanford as discussed hereinabove with respect to the anticipation rejection of claim 41. The Examiner relied on Pearson as disclosing "a rack K1 having a worm gear driving a complementary worm wheel (K)." (Office Action, page 4). The Examiner then states that it would have been obvious to "provide the rack in Stanford with a worm, as evident from Pearson, for the purpose of providing a compact means for providing a high gear ratio and generally preventing the driven gear from driving the worm." (*Id*). Applicants respectfully disagree.

The teachings of Stanford and Pearson are discussed above with respect to the obviousness rejection of claim 1. As previously discussed, Stanford and Pearson clearly fail to teach or suggest *forming the complementary surface of the linear positioning member as a substantially helically cut worm gear.*

Moreover, those of ordinary skill in the art would recognize that the Examiner's proffered motivation to combine Stanford and Pearson is lacking. Specifically, the ability of a worm gear to "provide a high gear ratio" and prevent "the driven gear from driving the worm," are *based on the worm's rotational displacement about its longitudinal axis.* In other words, linearly displacing a worm gear simply does not provide the same reduction in gear ratio as rotational displacement of the same worm gear. Additionally, the Examiner simply has not explained how forming a *linearly displacement member* to include a portion as a substantially helically cut worm gear, as recited in claim 41 of the present invention, prevents the driven gear from driving the worm.

Thus, one of ordinary skill in the art would clearly lack motivation to combine Stanford and Pearson in the manner proposed by the Examiner.

Applicants, therefore, submit that claim 41 is clearly allowable over Stanford and Pearson. Applicants further submit that claims 43 and 49 through 53 are also allowable over Stanford and Pearson as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 43, Applicants submit that Stanford and Pearson fail to teach or suggest *substantially restraining the worm gear from rotating about the first axis.*

With respect to claim 49, Applicants submit that Stanford and Pearson fail to teach or suggest flowing a compressible fluid through the flow path.

With respect to claim 51, Applicants submit that Stanford and Pearson fail to teach or suggest flowing the fluid at a substantially constant rate of approximately 1 milliliter per minute or less.

With respect to claim 52, Applicants submit that Stanford and Pearson fail to teach or suggest maintaining a pressure of the fluid within approximately 3 pounds per square inch of a predetermined pressure.

Applicants, therefore, respectfully request reconsideration and allowance of claims 41, 43 and 49 through 53.

Obviousness Rejection Based on U.S. Patent No. 429,658 to Stanford, or, in the alternative, based on the Combination of Stanford and U.S. Patent No. 2,520,430 to Pearson, and Further in View of U.S. Patent No. 4,759,386 to Grouw, III

Claims 5 through 13, and 31 through 35, stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Stanford, U.S. Patent No. 429,658 (hereinafter "Stanford"), as applied to claims 1, 3, 4, 14 through 19, 36 through 41, 43, and 49 through 53 above, or, in the alternative, as being unpatentable over the combination of Stanford and Pearson, U.S. Patent No. 2,520,430 (hereinafter "Pearson"), and further in view of Grouw, III, U.S. Patent No. 4,579,386. Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 5 through 13

Each of claims 5 through 13 depend, ultimately, from independent claim 1. The Examiner relies on Stanford and Pearson as discussed hereinabove, and then cites Grouw III as disclosing a motor for positioning a linear actuating member associated with a valve. The Examiner concludes that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Stanford a motor for actuating the linear actuating member for the purpose of accurate automated operation of the member." (Office Action, page 5).

As previously discussed, Stanford and Pearson fail to teach or suggest all of the limitations of claim 1. For example, Stanford clearly fails to teach or suggest a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and

cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis, *wherein the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.* Grouw III clearly fails to remedy this shortcoming of Stanford and Pearson.

As such, Applicants submit that claims 5 through 13 are allowable as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to the "motor" described by Grouw III, the only specific details provided appear to include the statement that "alternating current from a suitable source... supplies power to a reversible permanent split capacitor motor 28" and that the "[m]otor 28 is typically 115 volts, 60 cycle, 1.14 rpm, with continuous duty 40 inch pounds starting torque." (Col. 2, lines 26-31). Additionally, while the Examiner asserts that the motor in Grouw III is "applicable to all known types of motor[s]" (Office Action, page 5), such a conclusory assertion fails to provide sufficient evidence that one of ordinary skill in the art would arrive at the presently claimed invention based on any particular combination of Stanford, Pearson and Grouw III.

As such, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest various limitations of the claimed actuator.

For example, with respect to claim 5, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest that the linear positioning actuator includes a linear positioning stepper motor.

With respect to claim 7, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest that the linear positioning actuator is configured to receive an electrical input signal in the range of approximately 4 to 20 milliamps.

With respect to claims 8 and 9, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest that the linear positioning actuator includes a direct current power supply. While the Examiner takes official notice that the claimed specifics regarding the motor are "well known in the electrically driven art" (Office Action, page 5), the Examiner has not provided a specific evidence as to why one of skill in the art would utilize such configuration, in conjunction with the other claimed elements, as set forth in the presently claimed invention.

With respect to claim 9, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest that the direct current power supply includes a transformer configured to be coupled with an alternate current power supply.

Applicants, therefore, respectfully request reconsideration and allowance of claims 5 through 13.

Claims 31 through 35

Each of claims 31 through 35 depend, ultimately, from independent claim 19. The Examiner relies on Stanford and Pearson as discussed hereinabove, and then cites Grouw III as disclosing a motor for positioning a linear actuating member associated with a valve. The Examiner concludes that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Stanford a motor for actuating the linear actuating member for the purpose of accurate automated operation of the member." (Office Action, page 5).

As previously discussed, Stanford and Pearson fail to teach or suggest all of the limitations of claim 19. For example, Stanford and Pearson clearly fail to teach or suggest a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis, *wherein the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.* Grouw III clearly fails to remedy this shortcoming of Stanford and Pearson.

As such, Applicants submit that claims 31 through 35 are allowable as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to the "motor" described by Grouw III, the only specific details provided appear to include the statement that "alternating current from a suitable source... supplies power to a reversible permanent split capacitor motor 28" and that the "[m]otor 28 is typically 115 volts, 60 cycle, 1.14 rpm, with continuous duty 40 inch pounds starting torque." (Col. 2, lines 26-31). Additionally, while the Examiner asserts that the motor in Grouw III is "applicable to all

known types of motor[s]" (Office Action, page 5), such a conclusory assertion fails to provide sufficient evidence that one of ordinary skill in the art would arrive at the presently claimed invention based on any particular combination of Stanford, Pearson and Grouw III.

For example, with respect to claim 31, Applicants submit that Stanford, Pearson and Grouw III fail to teach or suggest that the linear positioning actuator includes a linear positioning stepper motor.

Applicants, therefore, respectfully request reconsideration and allowance of claims 31 through 35.

Obviousness Rejection Based on Stanford, or, in the alternative, over the Combination of Stanford and Pearson, and Further in View of U.S. Patent No. 5,129,418 to Shimomura et al.

Claims 21 through 27, and 44 through 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Stanford, or, in the alternative, over the combination of Stanford and Pearson as applied to claims 1, 3, 4, 14 through 19, 36 through 41, 43, and 49 through 53, above, and further in view of Shimomura et al., U.S. Patent No. 5,129,418. Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 21 through 27

Each of claims 21 through 27 depend, ultimately, from independent claim 19. The Examiner relies on Stanford as teaching all of the limitations of claim 19 and then cites Shimomura as disclosing a P.I.D. controller and sensors connected with the controller for automatically controlling a flow based on sensed parameter values. The Examiner concludes that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the device of Stanford a controller that comprises a P.I.D. controller and/or sensors operably connected to the controller for the purpose of automatically controlling the flow based on desired sensed parameter values." (Office Action, page 6).

As previously discussed, Stanford and Pearson fail to teach or suggest all of the limitations of claim 19. For example, Stanford and Pearson clearly fail to teach or suggest a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis

upon such displacement of the linear positioning member along the second axis, *wherein the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.* Shimomura clearly fails to remedy this shortcoming of Stanford and Pearson.

As such, Applicants submit that claims 21 through 27 are allowable at least by virtue of their dependency from an allowable base claim. Applicants, therefore, respectfully request reconsideration and allowance of claims 21 through 27.

Claims 44 through 48

Each of claims 44 through 48 depend, ultimately, from independent claim 41. The Examiner relies on Stanford and Pearson as teaching all of the limitations of claim 41 and then cites Shimomura as disclosing a P.I.D. controller and sensors connected with the controller for automatically controlling a flow based on sensed parameter values. The Examiner concludes that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the device of Stanford a controller that comprises a P.I.D. controller and/or sensors operably connected to the controller for the purpose of automatically controlling the flow based on desired sensed parameter values." (Office Action, page 6).

As previously discussed, Stanford and Pearson fail to teach or suggest all of the limitations of claim 41. For example, as previously discussed, Stanford and Pearson fail to teach or suggest *forming the complementary surface of the linear positioning member as a substantially helically cut worm gear.* Shimomura clearly fails to remedy this shortcoming of Stanford and Pearson.

As such, Applicants submit that claims 44 through 48 are allowable at least by virtue of their dependency from an allowable base claim. Applicants, therefore, respectfully request reconsideration and allowance of claims 44 through 48.

Obviousness Rejection Based on Stanford, or, in the alternative, over the Combination of Stanford and Pearson, and Further in View of U.S. Patent No. 6,712,085 to Weissgerber et al.

Claims 28 through 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Stanford, or, in the alternative, over the combination of Stanford and Pearson, as applied to claims 1, 3, 4, 14 through 19, 36 through 41, 43, and 49 through 53, above, and further in view of

Weissgerber et al., U.S. Patent No. 6,712,085. Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 28 through 30 depend, ultimately, from independent claim 19. The Examiner relies on Stanford and Pearson as teaching all of the limitations of claim 19 and then cites Weissgerber as disclosing a fluid flow system wherein a pump is operable connected to a controller. The Examiner concludes that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the arrangement of Stanford a pump that is configured to provide a supply of flow through the valve, for the purpose of providing a controlled fluid flow therethrough." (Office Action, page 7).

As previously discussed, Stanford and Pearson fail to teach or suggest all of the limitations of claim 19. For example, Stanford and Pearson clearly fails to teach or suggest a linear positioning member having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis, *wherein the at least a portion of the linear positioning member which is configured to complementarily engage the gear member is configured as a substantially helically cut worm gear.* Weissgerber clearly fails to remedy this shortcoming of Stanford and Pearson.

As such, Applicants submit that claims 28 through 30 are allowable as depending from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 30, amended only to correct a grammatical error, Applicants submit that Weissgerber fails to teach or suggest a syringe pump.

Applicants, therefore, respectfully request reconsideration and allowance of claims 28 through 30.

ENTRY OF AMENDMENTS

The amendments to claims 1, 19, and 30 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1, 3 through 19, 21 through 41, and 43 through 53 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

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